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Forestry and the Environment: Mali Case Study

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### Summary

Mali has too much demand for too few trees. Although forests cover only 7 percent of the terrain, wood accounts for 95 percent of Mali's energy needs. With a drought in the 1960s and 1970s and population growth at 2.5 percent a year, Mali has found itself running out of forests.

Until very recently, the Malian Government approached forest conservation through central directives from its Forestry Service. The service placed restrictions on cutting and pruning trees that grew on unregistered land virtually the entire countryside. People had to obtain free permits to cut even the trees they had planted themselves on unregistered land. They had to buy permits for wood intended for sale.

Such regulations won the Forestry Service a reputation as an oppressor. Moreover, the regulations were largely self-defeating as a means of saving resources. They were largely unenforceable, so unlawful tree harvesting continued unabated. The regulations presented disincentives, so few people planted or nurtured trees. The tree count continued to dwindle.

In July 1993 a team from USAID's Center for Development Information and Evaluation (CDIE) went to Mali to assess how Agency programs were faring in reversing the depletion of forest resources. The evaluators found little progress in earlier years, owing largely to institutions that resisted change. They found some current successes, and some qualified hope for the future.

Even though it involved participation by the rural population through a communal approach to woodlot development, USAID's Village Reforestation Project I still abided by central government regulations. Individuals felt they had little to gain from the project. The project did plant at least one important lesson in the minds of planners: to have a chance of success, an activity must be "owned" by the people working on it.

A change of government in March 1991 and the establishment of a multiparty democracy made public agencies more receptive to decentralization. It also heightened the outlook for instituting better forestry practices. There is now cautious optimism that reforestation can take permanent root in the Malian countryside.

The evaluators found that USAID has played a significant role in recent policy reforms, in particular through supporting a proposed overhaul of the forestry code. The revisions will strengthen local institutions and return people to traditional wood-gathering ways, a move that will give Malians a tangible stake in conserving trees. USAID has also helped Mali make strides in resource management education. Despite the progress, though, a number of problems most notably, lack of institutional funding limit Mali's ability to sustain its forests over the long term without continued outside help.

## Background

Mali lies on the edge of the Sahara, a fact of geography that defines its dominant problem in forestry. The problem came to the fore during the great drought of the late 1960s and early 1970s, a signal event in Mali's history.

About twice the size of Texas, Mali covers 1.2 million square kilometers. The northern two thirds is desert, and most of the 8.9 million people live in the south. The country's natural resource base consists of 140,000 to 200,000 square kilometers of arable land (depending on rainfall), major river systems, and largely untapped mineral deposits. Because of drought, population pressure, poor land-use management, and deforestation, Mali is suffering severe degradation of much of its natural resource base. Forest products account for 95 percent of the country's energy needs. As the supply of wood dwindles, consumption increases. The United Nations Food and Agriculture Organization in 1980 estimated annual fuelwood requirements at 1.7 million tons. Seventeen percent of that was consumed in urban areas. Ten years later, consumption had risen to 3.9 million tons, and the share of urban use had doubled.

The focus of USAID support and of this study, Region V, lies south of the Niger River, along the country's waist. The region encompasses an area the size of Rhode Island, Massachusetts, and Connecticut combined. Its arid climate is classified as Sahelian. Although rainfall has increased since 1986, the rains are shorter and less regular than before the great drought.

## USAID's Assistance Approach

In helping Mali try to regenerate its forests and make them sustainable, USAID has, from the start, encouraged decentralization of the Forest Service and greater participation by the people. There are signs that this emphasis is finally beginning to show results.

USAID support for forestry in Mali comes from several project sources: the Village Reforestation Project (VRP I) (\$655,000), which was redesigned in fiscal year 1987 as VRP II (\$2.6 million); the Land Use Inventory Project (\$5.5 million); and the PVO Co-Financing Project (\$50 million).

VRP I sought to help reforestation through the development of

community woodlots. The project failed, principally because villagers felt they had little stake in the undertaking. With VRP II the purpose of encouraging tree cropping remained unchanged, but the approach added greater emphasis on decentralization. It also increased its support of private voluntary organizations. Most important, it integrated sustainable agriculture more immediately important to rural households than are trees into its forestry program.

The proposed Mali Forestry Reform Program presents USAID's current view, which recognizes the stifling effect of inappropriate policies and overly centralized state control. Decentralization and legal reform are essential to making progress in forestry and land use management. Legal codes, which emphasize resource protection, conflict with traditionally based local institutions for managing forest and land resources. USAID's strategic focus is on integrating technology transfer and institutional development and extension. It includes expansion of agro-forestry techniques and emphasis on the design and implementation of land use or forestry management plans.

#### Evaluation Findings

Mali's forestry program is evolving along with the country's overall movement toward more decentralized institutions. USAID's Village Reforestation Project has been a good vehicle for testing and tempering new arrangements being forged to engage local communities in national environmentally sustainable economic development.

#### Program Implementation

With its shortage of financial and human resources, Mali's Forestry Service has been unable to manage the country's forestry resources using a protectionist, state-oriented approach. Efforts to move to greater individual and community control of forestry activities are making progress, but they are not yet the general rule.

USAID largely ignored Forestry Service institution building until phase II of VRP. Efforts since VRP II began have paid off in increased capacity to carry out group and individual forestry and soil conservation projects. Overall, the Forestry Service has made good progress in staffing field offices with the best available people. By 1990 staff had increased to 1,161 people, about 70 percent of them foresters. Nonetheless, budget constraints hamper the ability of the Forestry Service to carry out extension services, research, and social forestry.

After the change in government in 1991, which brought in a multiparty democracy, the Forestry Service adjusted its management orientation toward two-way communication and local participation and responsibility. But the service retained its protectionist mission. The evaluators consider the situation unsettled; bureaucratic stakeholders stand to lose power if the service is further decentralized.

USAID-supported American PVOs and local nongovernmental organizations (NGOs) played major roles in implementing group and individual forestry management programs. USAID/Mali considers PVOs and NGOs as an integral part of the Mission's program and as an option in delivering services to local communities. Stringent requirements in financial accountability, however, inhibit local NGOs that seek direct USAID funding.

Local traditional institutions, too, can play an important role in forestry and land management. These include such things as self-help village associations and village tree masters, who pass on technical knowledge and guide young people's tree-care work. Before independence in 1960, these institutions oversaw and protected the lands and resources belonging to the villages. With the transfer of authority from localities to the central government, the role of traditional institutions diminished sharply. The Forestry Service took over management of all public lands. Deprived of ownership, the people came to see the Forestry Service as oppressor. After the 1991 change in government, popular pressure built to re-empower local institutions. Through support to the Near East Foundation and, to a lesser extent, VRP II, USAID promoted the strengthening of these institutions.

VRP II succeeded in building local ownership of forest conservation measures in project villages. VRP II used trained forestry extension agents and contract extension personnel to develop strong local institutions to train villagers in management and planning. During village visits, CDIE evaluators observed enthusiasm and pride in the people's resource protection activities. Villagers explained their activities and the reasons for them, possessing command over technical aspects and future plans. Clearly they owned their activities.

Despite progress in greater village commitment and participation, problems remain in the extension mechanism. Forestry extension is not self-sustaining; it still needs financial support from donors. Extension linkages are weak. Local institutions can take on the knowledge-transfer function, but they must be able to connect the local client with the source of knowledge about the technology. This connection is not complete in Mali. Extension agents sometimes have difficulty communicating with local populations, understanding local farming systems, applying extension methods (especially listening), and understanding the technology being extended. Also weak is the extension research linkage. Research is done in one organization, but others carry out the extension function. All act independently, and the recipient may receive contradictory messages. When the knowledge transfer process is integrated (with the same agency and preferably the same agent in a village working on forestry, crops, and livestock), the outcome may be more effective and less costly.

Since drought visited Mali in the 1960s and 1970s, populations have a better working awareness of the role of forests and soil and water conservation. Through USAID-funded extension and awareness activities, environmental awareness has increased. Villagers can, for example, readily cite the names of vanished tree species and

give figures for the steadily increasing distances covered in the search for firewood.

USAID has tried to involve the Forestry Service in spreading environmental awareness, but the service's protection and enforcement role clashes with such efforts. Early efforts under VRP I to retrain Forestry Service agents as extension officers met with only marginal success. The villagers regarded the forestry officers as suspect, often viewing them as mere collectors of fines.

That is changing, however. Increasingly, as a result of USAID-supported technical training specifically adapted to project objectives and to socioeconomic conditions Forestry Service agents are being seen not as agents of repression but as simply extension agents. USAID-supported forestry activities in Region V included extensive training programs and publicity campaigns in local languages. That is important to get all parties both Forestry Service and villagers operating on the same wavelength.

Since 1991 Mali has made rapid progress in policy reform. USAID financed both (1) the analysis that provided the basis for reform proposals and (2) the participatory processes leading to the National Conference on the Revision of the Forestry Code. The conference, held in July 1993, made recommendations on new forestry legislation. Until the proposals become statute, though, policy reform will have only limited impact.

As it now stands, Mali concentrates power over forest resources in the hands of the State. The State claims ownership of all unregistered land in the country virtually all land outside urban areas. Rural residents normally use customary practices regarding ownership and usage rights. That is, individuals and families claim access to land through inheritance, gifts, and borrowing arrangements. They rarely go through the arduous process of registering their claims.

Mali law restricts the customary rights of landlords to prune and fell trees on unregistered land. And the law is enforced. Consequently, farmers feel they do not own the trees on the land they cultivate. They have little incentive to plant or care for trees, even in their own fields.

The proposed revisions to the Forestry Code and the Landed Property Code attempt to close the gap between law and local practice. The National Conference recommended transfer of legal responsibility for village forests to local government organizations. After national government review, recommendations will be presented for legislation.

Malian forestry programs are using a wide range of improved and borrowed technologies for group and individual forestry, natural resource management, and sustainable agriculture. Many of the technologies are borrowed or upgraded from traditional practices or were new applications of old technologies. Several technologies come from USAID programs in neighboring countries. No totally new

technologies were developed or extended by USAID-funded activities. Success appears to depend on two factors. First, the technology must improve on a traditional activity; second, the user must get a quick return from undertaking the activity. The table lists some technologies and their objectives.

Failure to develop adequate baseline surveys, information systems, and institutional linkages for information exchange has limited the usefulness of USAID-funded forestry activities in identifying extendable technologies. Most indicators of technology adoption are qualitative at best anecdotal and often incomplete. Sometimes data exist in an unusable form. Information on VRP II activities, for example, is kept in handwritten notebooks. Any attempt to analyze these data would require hand-tallying or entering the data into a computer.

### Program Impact

Despite limited availability of information, individuals and groups in Region V are modifying their technologies for forestry and natural resource management. Many practices promoted by USAID have spread beyond project participants. This change comes only after a failed quick-fix solution to deforestation: village woodlots for fuel production. When VRP I started, the cultivation of village woodlots (along with industrial plantations) was the dominant technology. By 1983 about 20 hectares of woodlots had been established in 30 villages and about 130,000 seedlings produced. But the woodlots failed. Among the reasons:

Villagers felt they did not own their woodlot and could not see a use for the trees. To avoid being fined, they dared not prune or harvest unless told to do so by forestry agents.

The lots were not economic. Firewood is a low-value crop. Moreover, species chosen were ill suited to the local area. The planted eucalyptus and neem need more rainfall than prevails in Region V.

Only 30 percent to 40 percent of the seedlings survived.

Weak government institutions could not make corrections that might have made the woodlots more viable. The CDIE evaluators found problems in leadership, coordination, information dissemination, and extension training.

By contrast, VRP II encouraged individual (as opposed to communal) tree planting and management. This program succeeded, especially where microclimates permitted profitable growth. Farmers came to favor a combination of garden, nursery, orchard, and woodlot over woodlots alone. The combination meets a variety of needs, including tree products. Through the 1992 growing season, VRP II's 37 villages had 4.75 hectares of woodlots planted with trees only, compared with 30.25 hectares in garden/nursery and orchard/woodlot combinations.

Credit for the turnaround on tree cultivation probably goes to education. After the 1991 change of government, extension agents

made it known that people would not be fined for pruning field trees. As a result, villagers began to take responsibility for managing and protecting trees on the land they tended. CDIE evaluators confirmed a shift in people's attitudes throughout the region; protection of field trees is spreading rapidly.

Increases in income can be traced to improved resource management. Improved agronomic practices such as contour plowing and water harvesting help stabilize the soil. That's especially important during drought years, as it reduces the risk of a poor harvest. During 1991 VRP II, through the Forest Service, extended improved soil and moisture conservation techniques to 43 farmers. Seven increased their yield by 55 percent in treated fields over the last year's production. Truck farms and individual mininurseries, too, return a profit to many cultivators.

### Program Performance

USAID forestry programs in Mali are successful as pilot efforts that combine approaches to forestry and sustainable agriculture. If VRP II had kept to its design, it would not have had as many forestry technologies adopted. As it happened, VRP II shifted from forestry alone to forestry and sustainable agriculture. Project officers believed, correctly, that with adequate extension, farmers would become aware of the benefits of tree planting on their own land.

To be adopted, the array of technologies offered must produce quick returns to the household. But forestry interventions require several years before the investment starts producing income. VRP II managers took this into account and offered sustainable agriculture and forestry technologies simultaneously.

Almost all households in Region V are net consumers of basic cereals the people live on the margin. Being able to choose from a menu of technologies helps people find the best way to reduce risk to food security. It also gives them a sense of empowerment and control. This integrated approach appears a more sustainable means of technology transfer than offering forestry and crop packages in isolation of each other.

A number of concerns cloud hopes about the long-term sustainability of forestry programs. Perhaps the principal concern is funding. One of the poorest countries in Africa, Mali lacks the resources to keep many of its institutions going without outside donor support. Thus the Forestry Service suffers because cotton and rice dominate claims on research and extension. Nor is the private sector in a position to take up the burden of supporting such activities as technology introduction.

Another concern is the lack of effective linkages between research and organizations that carry out the technology transfer. Once research is done, the results must be turned into extension recommendations and a nucleus of people trained in using the technology. There is little evidence that this is happening. The fact that the Forest Service carries out both extension and

policing may also hamper sustainability. In the recipient's mind, the police role negates the extension message. At very least, the extension function and the police function should be carried out by separate Forestry Service units.

### Lessons Learned

A sense of ownership of an activity, particularly a group undertaking, is critical. Attempting to do forestry on the cheap, using a strict technological fix, does not work. VRP I, with its communal woodlots, demonstrated that. The activity must be owned by the people working on it. They must share in planning, rule making, implementation, and distribution of benefits.

Effective forestry management requires broadening political participation through decentralization and by delegating rule-making authority. Before 1991 the people in Region V felt they had lost authority to manage their own village space and the resources in it. They also felt dispossessed of political voice. Since then, Mali's ongoing revolution has stood centralization and government-by-directive on its head. The people are responding positively to the new participatory approach, though it has yet to be fully implemented.

Forestry interventions are more likely to succeed if they are taken simultaneously with agriculture interventions. Households and groups adopt multiple technologies to improve their chances for food security. Farmers are more likely to adopt a forestry technology, with its long-term return, if it is packaged with an agricultural technology, with its short-term payoff. The range of technologies extended should cover the whole range of forestry and sustainable agriculture activities.

A single agency cannot effectively carry out both the functions of enforcement and extension. The message gets lost if the person carrying out the extension function is the same person who collects fines for pruning trees. The situation is particularly tenuous if the person has abused his power in the past. The two functions need to be separated into different organizations, at least at the local and provincial level.

This Evaluation Highlights was prepared by Phillip Church of the Center for Development Information and Evaluation. It summarizes the findings from the USAID Working Paper "Forestry and the Environment: Mali Case Study," by Abbe Fessenden, LeRoy Duval, and Alassane Kanoute. Readers can order copies of CDIE reports from the DISC, 1611 North Kent Street, Suite 200, Arlington, VA 22209-2111, telephone (703) 351-4006; fax (703) 351-4039. Editorial and production services provided by Conwal Inc.